

PROCEEDINGS  
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BIOLOGICAL SOCIETY OF WASHINGTON

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NEW CRAYFISHES OF THE GENUS  
*PROCAMBARUS* FROM ALABAMA AND TEXAS  
(DECAPODA, ASTACIDAE)

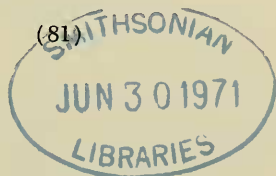
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The two species described here belong to different sections of the genus *Procambarus*, that from Alabama to the *Barbatus* Section (Hobbs, 1942: 33), and that from Texas to the *Blandingii* Section (Ortmann, 1905: 98). The latter occurs within the previously known limits of the range of the Section, and the localities from which the former was collected extend the northwestern part of the range of the *Barbatus* Section by less than 50 miles.

One of the diagnostic characteristics cited for the *Blandingii* Section (see Hobbs, 1962: 280) is the possession of asymmetrical first pleopods by the male. While indeed most of the members assigned to it do have distinctly asymmetrically arranged pleopods, or they are not mirrored images of one another, a few exceptions have been observed recently, and in *P. texanus*, described below, the pleopods are almost completely symmetrical. A review of the infrageneric groupings of the genus is currently being undertaken, and revised diagnoses of such taxa will be presented in that study.

I should like to acknowledge with thanks the assistance of Martin A. Hollingsworth of Georgia State University who aided me in collecting the specimens from Alabama, and of James L. Larimer of the University of Texas who secured all of the specimens of the species from Texas. I am also grateful to my colleague, Fenner A. Chace, Jr., for his criticisms of the manuscript.



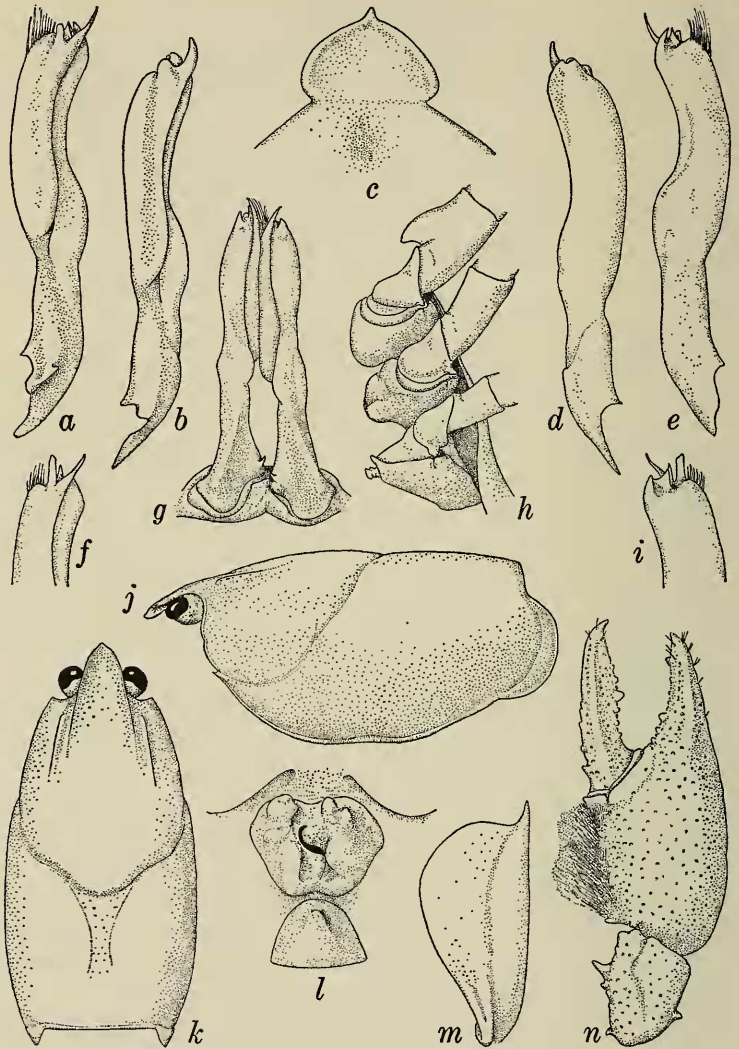


FIG. 1. *Procambarus capillatus* new species (pubescence removed from all structures illustrated except in Fig. 1a, e, and n). a, mesial view of first pleopod of holotype; b, mesial view of first pleopod of morphotype; c, cephalic portion of epistome of holotype; d, lateral view of first pleopod of morphotype; e, lateral view of first pleopod of holotype; f, mesial view of distal portion of first pleopod of male from ditch adjacent to Escambia River on State Route 17, Escambia County, Alabama; g, caudal view of first pleopod of holotype; h, caudal view of first pleopod of morphotype; i, mesial view of distal portion of first pleopod of male from ditch adjacent to Escambia River on State Route 17, Escambia County, Alabama; j, dorsal view of cephalon of holotype; k, dorsal view of cephalon of morphotype; l, ventral view of cephalon of holotype; m, ventral view of cephalon of morphotype; n, lateral view of first pleopod of male from ditch adjacent to Escambia River on State Route 17, Escambia County, Alabama.

***Procambarus capillatus* new species**

(Figure 1)

*Diagnosis:* Body and eyes pigmented. Rostrum without marginal spines or tubercles, acumen not delimited basally. Areola 31.2 to 33.7 percent of entire length of carapace, and 5.4 to 6.6 times longer than wide. Cervical spines lacking. Suborbital angle obsolete. Postorbital ridges lacking tubercles or spines. Antennal scale approximately 2.3 times longer than wide, broadest distal to midlength. Mesial surface of palm of chela of male hirsute; longitudinal ridges on fingers poorly developed. Ischium of third pereopods, and occasionally that of fourth, with simple hooks. First pleopods asymmetrical, extending cephalically almost to base of second pereopods, with prominent shoulder on cephalic surface at base of cephalic process, and with subapical setae confined to distal margin of shoulder; distal extremity bearing four corneous elements: (1) subspiculiform mesial process directed caudodistally and somewhat laterally and extending distally beyond other elements; (2) short, distally rounded cephalic process situated mesially at cephalic base of mesial process; (3) short, acute, recurved, caudal process arising from distal caudolateral surface of appendage and extending distally only slightly beyond end of cephalic process; and (4) subtriangular (in mesial and lateral aspects) central projection, centrally situated and extending distally to level of distal end of caudal process. Annulus ventralis freely movable, with broad deep longitudinal trough flanked cephalically by high irregular ridges and containing S-shaped sinus; latter extending along caudal two-thirds of annulus; sternite between bases of fifth pereopods produced cephaloventrally into conelike prominence. Sternum cephalic to annulus steeply vaulted, unadorned, and not overhanging annulus.

*Holotypic male, Form I:* Body (Fig. 1j, k) subovate, compressed laterally. Abdomen narrower than thorax (10.5 and 12.4 mm). Width of carapace equal to height at caudodorsal margin of cervical groove. Areola 5.4 times longer than wide with two or three punctations across narrowest part. Cephalic section of carapace twice as long as areola (length 33.4 percent of entire length of carapace). Rostrum excavate dorsally with slightly thickened convergent margins, lacking spines or tubercles, with usual submarginal row of setiferous punctations, and finely rugose basally with few prominent punctations; acumen not delimited basally from remainder of rostrum. Subrostral ridges moderately well developed and evident in dorsal aspect along posterior half of rostrum. Postorbital ridges prominent, grooved dorsolaterally, and lacking spines or tubercles. Sub-

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first pleopods of holotype; h, proximal podomeres of third, fourth, and fifth pereopods of holotype; i, lateral view of pleopod in Fig. 1f; j, lateral view of carapace of holotype; k, dorsal view of carapace of holotype; l, annulus ventralis of allotype; m, antennal scale of holotype; n, dorsal view of distal podomeres of cheliped of holotype.

TABLE 1. Measurements (mm) of *Procambarus capillatus*.

	Holotype	Allotype	Morphotype
Carapace:			
Height	12.4	12.6	11.6
Width	12.4	12.7	11.3
Length	24.3	26.9	25.0
Areola:			
Width	1.5	1.4	1.3
Length	8.1	8.8	7.8
Rostrum:			
Width	3.7	4.3	3.5
Length	4.6	4.7	4.7
Chela:			
Length of inner margin of palm	7.7	6.7	6.0
Width of palm	8.0	7.8	6.3
Length of outer margin	19.4	17.3	15.5
Length of dactyl	11.0	10.0	8.7

orbital angle obsolete. Branchiostegal spine moderately strong. Carapace punctate dorsally and granulate laterally with well defined row of granules along ventral border of cephalic portion of cervical groove; cervical tubercle only slightly larger than neighboring ones on branchiostegites and hepatic areas of carapace. Abdomen longer than carapace (25.5 and 24.3 mm). Cephalic section of telson with two spines in each caudolateral corner, mesial pair movable. Uropods with two well developed spines on basal podomere; inner ramus with strong distolateral spine and smaller apical one on median ridge, latter not reaching distal margin of ramus; outer ramus with row of small spines immediately proximal to transverse suture with one larger one adjacent to lateralmost member. Cephalic portion of epistome (Fig. 1c) subminarette-shaped with prominent fovea proximally; surface subplane, slightly elevated medially, and with elevated (ventrally) margins. Antennules of usual form with prominent spine on ventral surface slightly distal to midlength; mesial border of entire peduncle with plumose setae, conspicuously developed on ultimate podomere. Antennae extending caudally almost to base of telson. Antennal scale (Fig. 1m) about 2.3 times longer than broad, greatest width distal to midlength, lamellar portion much broader than thickened lateral portion; latter terminating in moderately long spine.

Third maxillipeds with ventral surface of proximal podomeres through basal half of merus and peduncle of exopod conspicuously hirsute.

Right chela (Fig. 1n) moderately short and heavy, subovate in cross section, moderately depressed. Mesial surface of palm with conspicuous brush of long plumose setae obscuring several rows of tubercles (mesial-

most consisting of approximately 11); lateral surface with row of setiferous punctations, and upper and lower surfaces with squamous tubercles, mesially situated ones largest, all becoming more depressed laterally, proximolateral ones replaced by setiferous punctations; lower surface with prominent tubercle distolateral to articular condyle at base of dactyl. Fixed finger with broad rounded longitudinal ridge dorsally and ventrally, flanked by setiferous punctations, lateral surface very weakly costate, and opposable margin with row of six evenly spaced tubercles along proximal two-thirds, third from base largest, and large tubercle projecting from lower level at base of distal fifth; single row of minute denticles extending between and distal to tubercles. Dactyl with weak dorsal and ventral submedian longitudinal ridges flanked proximally by tubercles and distally by setiferous punctations; mesial surface with row of six tubercles in proximal half and setiferous punctations distally; opposable surface with row of six tubercles along proximal two-thirds, fourth from base largest and marking distal end of proximal excised portion of margin, single row of minute denticles between and distal to tubercles.

Carpus of right cheliped longer than broad (7.3 and 5.2 mm) with mesial, dorsomesial, and ventromesial surfaces tuberculate, otherwise punctate; dorsal surface with sinuous, oblique depression; mesial surface with one major tubercle and smaller one at its proximal base; lower portion of mesial surface with row of four tubercles extending proximodorsally from mesial ventrodial angle; ventral surface with large tubercle at base of condyle on distolateral angle and two or three smaller ones proximolateral to oblique row of tubercles on lower mesial surface.

Merus of right cheliped tuberculate dorsally and ventrally, dorsal tubercles progressively larger distally, and sparsely punctate mesially and laterally; ventral surface with mesial row of 13 tubercles and lateral one of six proximal to bifurcation, and each ramus with four, those in mesial ramus much more conspicuous than those in lateral. Ischium with row of five tubercles, proximalmost largest.

Hooks on ischia of third and fourth right pereopods, that on left fourth pereopod reduced to tubercle (Fig. 1h); hooks simple and both overreaching distal extremities of corresponding basis. Coxa of fourth pereopod with caudomesial boss virtually obsolete; that on fifth prominent, subacute, and obliquely flattened.

Sternum between third, fourth, and fifth pereopods moderately deep and bearing heavy fringe of plumose setae on ventrolateral margins.

First pleopods (Fig. 1a, e, g) as described in diagnosis.

*Allotypic female:* Description of holotype applicable to allotype except for secondary sexual characters and following: epistome lacking cephalo-median prominence; third maxilliped slightly less hirsute; chela proportionately shorter and mesial surface of palm lacking conspicuous brush of plumose setae, revealing several irregular rows of tubercles; lateral margin of propodus more distinctly costate; merus of right cheliped somewhat unusual as compared with other females, bearing four minor tubercles on mesial surface with one distal to major tubercle and three

proximal to it, lower mesial surface with tubercles more irregularly arranged. See measurements.

Annulus ventralis (Fig. 11) as described in diagnosis, deeply embedded in sternum.

*Morphotypic male, Form II:* Differing from holotype in following respects: third maxillipeds and mesial surface of palm of chela not so conspicuously hirsute, but brush on latter markedly more strongly developed than in allotype, obscuring most tubercles in area; opposable margin of propodus and dactyl of chela with rows of five and seven tubercles, respectively; mesial surface of carpus with one additional small tubercle proximally; ischia of third pereopods only with hooks, those much reduced in size; coxae of fourth pereopods with scarcely trace of caudomesial boss whereas those of fifth with similar, well developed, although less acute, prominences.

First pleopods (Fig. 1b, d) extending cephalically almost to bases of second pereopods with shoulder on cephalic surface much more weakly developed than in holotype; terminal elements as in latter, but none coenous, all more inflated and less sharply defined.

*Color notes:* Spotted Phase—Ground color of body and appendages olive green with brown flecks dorsally and dorsolaterally. Branchiostegites with paired dorsolateral irregular stripes extending from caudal margin of carapace along caudal two-thirds of areola. Stripes continuing onto abdomen in form of paired, dark, rectangular patches on anterior portion of each segment, patches becoming progressively smaller caudally. Abdomen also with narrow longitudinal dark stripe extending along line of junction of terga and epimera. Basal podomeres of pereopods and lower surfaces of distal podomeres of cheliped suffused with pale pink. Plumose setae on palm of chela straw brown.

Striped Phase—Differs from spotted phase chiefly in possessing broad, dorsomedian, pinkish-tan stripe extending caudally from level of gastric region to base of telson, flanked laterally by continuous dark stripes; margins of latter, particularly ventral ones, irregular on gastric and hepatic regions of carapace.

*Size:* The largest specimen available is a female having a carapace length of 27.9 mm. The largest and smallest first-form males have corresponding lengths of 27.7 and 24.3 mm.

*Type-locality:* Drainage ditch adjacent to Burnt Corn Creek (Escambia River drainage) on State Route 41, northwest of Brewton, Escambia County, Alabama. The adult specimens were dug from complex burrows in sandy clay soil adjacent to a wooded area supporting *Liquidambar styraciflua* L., *Quercus* sp., *Pinus* sp., and with *Salix* sp. growing abundantly along the ditch.

*Types:* The holotypic male, form I, allotypic female, and morphotypic male, form II (Nos. 131454, 131455, 131456, respectively) are deposited together with the paratypes (2 ♂ I, 9 ♂ II, 13 ♀, 38 juv. ♂, and 43 juv. ♀) in the National Museum of Natural History, Smithsonian Institution.

*Range:* Insofar as is known, this crayfish is confined to the Escambia

River basin in Escambia and Conecuh Counties, Alabama, and perhaps Escambia County, Florida. The type-series has been selected from the type-locality and from a roadside ditch, 4 miles south of the junction of U.S. Highways 31 and 84 in Conecuh County, Alabama. Atypical specimens tentatively assigned to the species were collected in three additional localities: a drainage ditch adjacent to the Escambia River on State Route 17, and a similar habitat on a farm road 3 miles northeast of Flomaton, both in Escambia County, Alabama, and from a drainage ditch at Bluff Springs, Escambia County, Florida.

*Variations:* While there are minor variations in the numbers of tubercles on the various podomeres of the cheliped, there is remarkable uniformity among those specimens constituting the type-series. The presence of a hook on the ischium of the dextral fourth pereopod of the holotype probably represents an atavistic occurrence, for it is lacking on the sinistral member, and, in the remaining males, hooks occur only on the third pereopods.

Unfortunately, among the three lots of specimens excluded from the type-series, there is only one first-form male. Whereas it is similar in most respects to *P. capillatus*, there are distinct differences. Among them are: the coxa of the fourth pereopod is provided with a moderately well developed boss; the lateral surface of the distal portion of the first pleopod is straight rather than curved mesially; the cephalic process is much more elongate, extending beyond the tip of the central projection, and the caudal process is shorter, less acute, and more intimately associated with the central projection than in typical *capillatus* (Fig. 1f, i).

*Relationships:* *Procambarus capillatus* has its closest affinities with *P. rathbunae* (Hobbs, 1940: 414), its ecological counterpart in the adjacent Yellow River basin in Florida, and more distantly with other members of the Barbatus Group, all of which are primary or secondary burrowers. All of the species of the group have markedly similar gross morphological features, and the primary differences between them are to be found in the arrangement and disposition of the terminal elements of the first pleopod of the male. The combination in males of possessing an acute, corneous, distally directed caudal process and with chelae bearing barbate palms will distinguish this crayfish from all other members of the genus.

*Life history notes:* All of the specimens definitely assigned to this species were collected during April, 1970, when first-form males were obtained. No ovigerous females or those carrying young have been observed.

***Procambarus texanus* new species**  
(Figure 2)

*Diagnosis:* Body and eyes pigmented. Rostrum with marginal spines or tubercles delimiting base of acumen. Areola 34.2 to 37.0 percent of entire length of carapace, and 8.5 to 16.4 times longer than wide. Single cervical spine present or absent, often so small as to be unrecognizable. Suborbital angle rudimentary or absent. Postorbital ridges terminating cephalically in small spines or tubercles. Antennal scale approximately

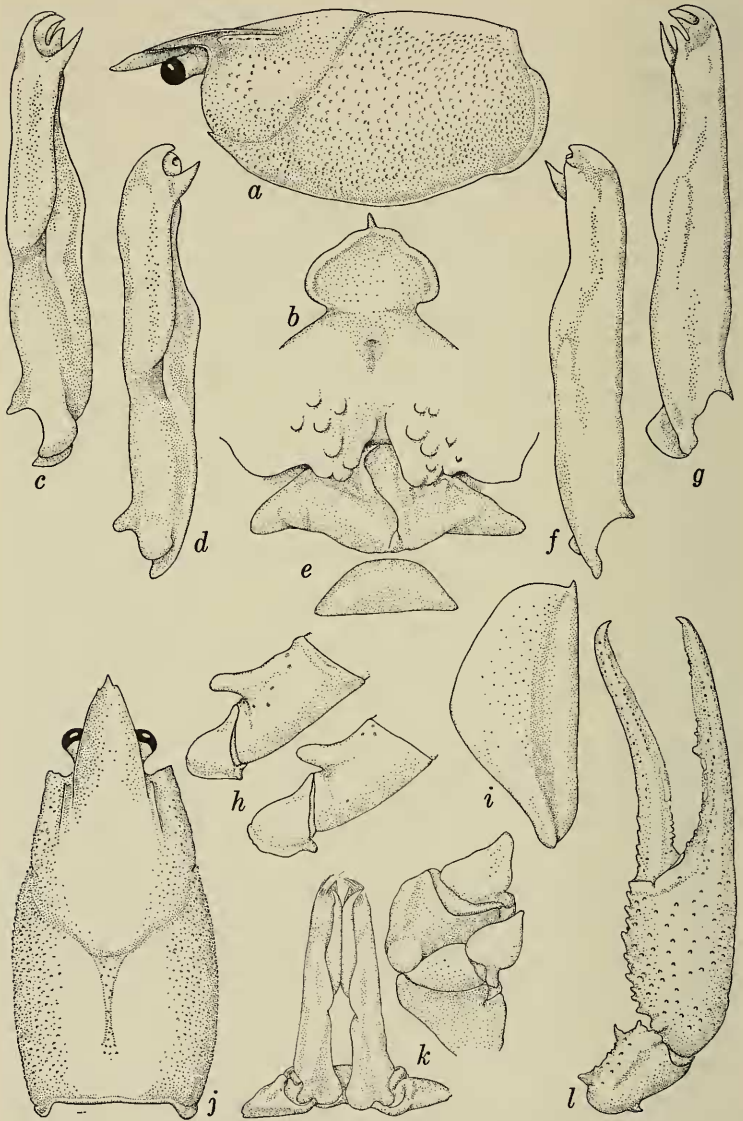


FIG. 2. *Procambarus texanus* new species (pubescence removed from all structures illustrated). a, lateral view of carapace of holotype; b, cephalic portion of epistome of holotype; c, mesial view of first pleopod of paratypic male, form I; d, mesial view of first pleopod of morphotype; e,



2.1 times longer than wide, broadest at or slightly proximal to midlength. Mesial surface of palm of chela of male not hirsute but bearing row of six to eight tubercles; longitudinal ridges on fingers not sharply defined. Ischium of third and fourth pereopods with simple hooks. First pleopods almost symmetrical or with base of dextral pleopod slightly overlapping that of sinistral member, extending cephalically to base of third pereopods, lacking strong cephalic shoulder but provided with subapical setae obscuring, in lateral aspect, parts of terminal elements; distal extremity bearing four corneous elements: (1) long, tapering mesial process directed caudodistally and somewhat laterally, not reaching level of tip of central projection; (2) cephalic process contiguous along its caudal length to central projection and curved caudally with tip directed at 90 degree angle to axis of appendage; (3) caudal process subtriangular, directed caudodistally and reaching no farther distally than level of tip of mesial process; and (4) central projection bent caudally paralleling cephalic process, its tip extending caudally to level of tip of caudal process. Setiferous caudal knob situated at lateral base of cephalic process. Annulus ventralis overhung (ventrally) by multituberculate lobes from sternum immediately cephalic to it, subovate with greatest length in transverse axis, weakly sculptured, and with median S-shaped sinus extending from cephalic margin almost to caudal margin; sternite between bases of fifth pereopods gently rounded and not produced.

*Holotypic male, Form I:* Body (Fig. 2a, j) subcylindrical, only slightly compressed laterally. Abdomen narrower than thorax (21.6 and 26.4 mm). Width of carapace slightly greater than depth at caudodorsal margin of cervical groove. Areola about 15 times longer than broad with two punctations across narrowest part. Cephalic section of carapace about 1.6 times as long as areola (length 36 percent of entire length of carapace). Rostrum excavate dorsally with non-thickened convergent margins bearing rudiments of marginal tubercles; upper surface with widely scattered punctations between usual submarginal rows; acumen subtriangular, reaching slightly beyond base of ultimate podomere of antennule; subrostral ridges rather weakly developed and not evident in dorsal aspects. Postorbital ridges only moderately well developed with shallow dorsolateral furrow, and terminating in short, subacute, corneous tubercles. Suborbital angle rudimentary and obtuse. Branchiostegal spine short and heavy. Carapace punctate dorsally and conspicuously granulate laterally; single cervical tubercle only slightly larger than adjacent

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annulus ventralis of allotype; f, lateral view of first pleopod of morphotype; g, lateral view of first pleopod of paratype male, form I; h, basis and ischium of third and fourth pereopods of holotype; i, antennal scale of holotype; j, dorsal view of carapace of holotype; k, caudal view of first pleopods and basal podomeres of fourth and fifth pereopods of holotype; l, dorsal view of distal podomeres of cheliped of holotype.

TABLE 2. Measurements (mm) of *Procambarus texanus*.

	Holotype	Allotype	Morphotype
Carapace:			
Height	24.6	21.3	21.3
Width	26.4	21.5	22.3
Length	53.3	45.4	45.0
Areola:			
Width	1.2	1.6	1.3
Length	18.3	15.5	15.5
Rostrum:			
Width	8.7	7.7	9.1
Length	14.6	12.5	12.3
Chela:			
Length of inner margin of palm	18.0	8.6	14.5
Width of palm	14.9	9.3	10.9
Length of outer margin	58.8	26.9	45.5
Length of dactyl	35.4	16.7	27.6

granules. Abdomen subequal in length to carapace (53.7 and 54.2 mm). Cephalic section of telson with three abraded spines in each caudolateral corner, caudal section subtruncate with slight caudomedian emargination. Uropods with two short, acute, corneous tubercles on basal podomere; inner ramus with short distolateral spiniform tubercle and ante-apical one on median ridge; outer ramus with usual row of small spines immediately proximal to transverse suture, lateral two larger than others. Cephalic portion of epistome (Fig. 2b) with sinuous, rounded cephalolateral, somewhat elevated margins and conspicuous cephalomedian projection; fossa prominent and deep. Antennules of usual form with moderately strong ventral spine near midlength. Antennae broken but in other specimens extending caudally to fourth abdominal tergum. Antennal scale (Fig. 2i) approximately 2.1 times longer than broad, greatest width approximately at midlength, lamellar portion much broader than thickened lateral part; latter terminating in abraded moderately developed spine.

Third maxillipeds with basis and ischium moderately setose over much of postaxial surface, more distal podomeres distinctly more sparsely setiferous.

Right chela (Fig. 2l) distinctly elongate, subovate in cross section, rather strongly depressed. Mesial surface of palm with single row of seven prominent tubercles subtended above by four subparallel rows of smaller tubercles and below by irregularly placed ones; remaining surfaces of palm with squamous tubercles, those on lateral and dorsolateral

surfaces strongly squamous, tubercles progressively more elevated mesially on both dorsal and ventral surfaces; conspicuous tubercle present on distoventral margin at base of dactyl. Fixed finger with lateral margin bearing row of squamous tubercles proximally, row continuing distally in punctations set in shallow trench; dorsal and ventral surfaces with submedian longitudinal, rounded elevation flanked by punctations; opposable margin with row of 16 tubercles, fourth from base largest, along proximal two-thirds of finger, and one prominent tubercle on lower level at base of distal third, latter tubercle with smaller one immediately proximal to it; minute denticles between tubercles in row and band of denticles beginning above distal major tubercle extending to base of corneous tip of finger. Dactyl with upper and lower surfaces similar to those of fixed finger except few tubercles present basally on both surfaces; mesial surface with row of three tubercles along basal fifth and punctations distally; opposable surface with upper row of approximately 20 small tubercles along basal two-thirds and lower row of four larger ones in proximal half; proximal member of lower row conspicuously larger than other tubercles on opposable surface.

Carpus of right cheliped longer than broad (15.3 and 9.0 mm), tuberculate mesially, dorsomesially, and ventromesially, otherwise punctate and with shallow oblique furrow dorsally; mesial surface with one major tubercle, dorsomesial distal angle with another; distoventral margin with prominent tubercle on articular condyle and another at mesial angle.

Merus of right cheliped tuberculate dorsally, ventrally and distomesially, otherwise polished and with scattered punctations; terminal tubercle on dorsal surface conspicuously larger than others; tubercles on ventral surface arranged, for most part, in two rows of 19 tubercles each, mesial row flanked distomesially by more irregular row of seven tubercles. Ischium with row of five tubercles.

Hooks on ischia of third and fourth pereopods (Fig. 2h), both simple and extending proximally beyond distal extremity of corresponding basis. Coxa of fourth pereopod with prominent, rounded, vertically disposed caudomesial boss; that on fifth smaller and somewhat compressed in longitudinal plane of body (Fig. 2k).

Sternum between third, fourth, and fifth pereopods moderately deep and bearing comparatively weak fringe of plumose setae on ventrolateral margins.

First pleopods (Fig. 2c, g, k) as described in diagnosis.

*Allotypic female:* Description of holotype applicable to allotype except for secondary sexual characters and following: areola distinctly broader, 10.3 times longer than wide; mesial surface of palm of right chela with row of eight tubercles; opposable margin of fixed finger with row of nine tubercles (11 on left), third from base largest, along proximal half of finger, single prominent tubercle at level below row and slightly proximal to base of distal third; opposable margin of dactyl with single row of 15 tubercles along basal two-thirds, sixth from base largest; carpus of right chela with moderately large tubercle immediately proximal to major

tubercle on mesial surface; merus of right cheliped with ventromesial row of 12 tubercles and ventrolateral one of nine, ischium with row of three tubercles (see measurements).

Annulus ventralis (Fig. 2e) as described in diagnosis.

*Morphotypic male, Form II:* Differs from holotype in following respects: rostrum with well-defined, corneous, marginal tubercles; cephalic section of telson with only two spines in each caudolateral corner; epistome with cephalic margin nearly transverse and cephalomedian projection with two small tubercles; mesial surface of palm of right chela with single row of eight tubercles flanked by two moderately well-defined rows above and below; opposable margin of fixed finger with upper row of 16 tubercles (fifth from base largest) and lower row of 11 (penultimate largest) along basal two-thirds of finger; opposable margin of dactyl with upper row of 20 small tubercles and lower of 10 larger ones, fifth from base conspicuously larger than others on margin; carpus as in morphotype except major tubercle on mesial surface much slenderer; merus of right cheliped with ventromesial row of 15 tubercles and ventrolateral one of 12; hooks on ischia of third and fourth pereopods much reduced, neither reaching proximad of distalmost margin of corresponding basis; prominences of coxae of fourth and fifth pereopods also much reduced. (See measurements.)

First pleopods (Fig. 2d, f) extending cephalically to bases of third pereopods, lacking shoulder on cephalic surface; terminal elements essentially as in holotype but all except mesial process much reduced, and none corneous.

*Color notes:* (Based on specimens preserved in alcohol for about 2 weeks.) Dorsal surface of carapace reddish brown tending toward greenish blue in region of dorsal part of cervical groove; branchiocardiac grooves pale tan. Lateral surface of branchiostegites with dark, reddish-brown band on each side corresponding to "lateral horn" of saddle in such forms as *Procambarus pictus* (see Hobbs, 1958: 74); area below horn on branchiostegite pinkish cream with cream to whitish tubercles; hepatic area only slightly lighter in color than dorsal portion of carapace. Rostral margins and postorbital ridges black. Abdomen with median, broad, dark band extending from base to caudal margin of fifth tergite and two pairs of light, cream-pink, irregular splotches occurring from second to fifth tergite on cephalolateral portion immediately above epimera; epimera purplish red, that of second segment with pale-pinkish area in middle, others concolorous except for pale cephalic margins. Uropods and telson uniformly scarlet with buff fringe. Antennal scale bluish gray laterally, thickened portion pinkish, lateral portion of lamellar area red, fading to pinkish cream toward mesial and distal margins. Chelipeds reddish to orange above with mesial part of palm and upper surface of fingers suffused with gray; tubercles on palm and mesial surface of dactyl dark basally, and lighter, sometimes cream colored, distally; lower surface of palm and fingers similar to upper although

grayish suffusion not nearly so prominent. Dorsal surface of middle podomeres of ambulatory pereopods pinkish lavender, remainder of appendages pinkish cream.

*Size:* The largest specimen is a first-form male having a carapace length of 54.6 mm. The smallest first-form male has a corresponding length of 45.0 mm.

*Type-locality:* Fish Hatchery near Smithville, Bastrop County, Texas.

*Types:* The holotypic male, form I, allotypic female, and morphotypic male, form II (Nos. 131457, 131458, 131459, respectively) are deposited together with the paratypes (5 ♂ I, 1 ♀) in the National Museum of Natural History, Smithsonian Institution.

*Range:* This species is known only from the type-locality where it was collected with *Procambarus clarkii* (Girard, 1852: 91) and *Procambarus acutus* subsp.

*Variations:* There are few variations among the specimens except those derived from abrasions. None of them is devoid of injured or beveled tubercles. The morphotype appears to have molted more recently than the others for it shows fewer mutilations. In one or two of the specimens the acumen reaches to or slightly beyond the distal end of the peduncle of the antennule and the marginal tubercles on the rostrum are more prominent; correspondingly, the tubercles elsewhere are not nearly so worn as in the holotype. Excluding regenerated appendages, the variations pointed out in the above descriptions mark the limits of those observed.

*Relationships:* *Procambarus texanus* is more similar to *P. acutus* (Girard, 1852: 91), its subspecies and variants, and to *P. lecontei* (Hagen, 1870: 47) than to other members of the genus. The fact that it occurs in the same habitat with a crayfish that I believe to be a variant of the former suggests its specific status, and certainly it is distinct from the typical form of *P. a. acutus*, differing chiefly in the shorter, less twisted terminal elements of the first pleopod of the male (also the much reduced caudal knob), and in the more nearly closed sinus of the annulus ventralis, the latter partially obscured by prominent multituberculate prominences projecting posteriorly from the sternum immediately cephalic to it. It differs from *P. lecontei* in that the mesial process of the first pleopod is directed more distally than caudally, not at right angles to the main axis of the appendage. While the annulus ventralis is very similar to that of *P. lecontei* much more of it is hidden by the prominences from the sternum cephalic to it. Too, the areola is distinctly narrower in *P. texanus* and bears fewer punctations than does that of *P. lecontei*.

*Life history notes:* All of the specimens were collected during the late spring and early summer and judging by the relative conditions of the males (the second form appearing to have undergone the most recent molt), it is probable that the adult males were in the first form throughout the winter and spring months. No females with eggs or young have been observed.

## LITERATURE CITED

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